REMARKS

Applicant has received and reviewed the Final Office Action mailed by the Office on November 30, 2006 (hereinafter, "Final Action"), and submits this response to the Final Action with a request for continued examination (RCE).

Claims 1, 3-28, and 30-51 were pending in the present application. Applicant amends independent Claims 1 and 28 to clarify claimed subject matter and/or correct informalities. The original specification and drawings support these claim amendments at least at pages 11, 12, 14, 18, 19 and in Figures 2 and 3. Therefore, these revisions introduce no new matter.

Applicant adds Claims 52-54 to further clarify features of the claimed subject matter. The original specification and drawings support these claim amendments at least at pages 13-15, in Figures 1, and 2. Therefore, Claims 52-54 are presented and directed to subject matter of the original disclosure. Again, these revisions introduce no new matter.

Claims 1, 3-11, 13-28, 30-37, and 39-54 are for consideration upon entry of the present Amendment. Applicant requests favorable consideration of this response and allowance of the subject application based on the following remarks.

Withdrawn: Claim Rejections, Double Patenting and Claim Objections

Applicant appreciates Examiner's withdrawal of the rejections under 35 USC §112, second paragraph, §101, and §102(e) in the previous Office Action. Furthermore, Applicant appreciates Examiner's withdrawal of the provisional rejection under 35 U.S.C. §101 as claiming the same invention under double patenting.

Claim Rejections 35 U.S.C. §103

A.   **Claims 1, 3-6, 8, 10, 15, 16, and 23-27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20040158589 A1 to Liang et al. (hereinafter "Liang") in view of U.S. Patent No. 6,816,956 B1 to Benayon et al. (hereinafter "Benayon").**

B.   **Claim 7** stands rejected under 35 U.S.C. §103(a) as being unpatentable over Liang in view of Benayon, and further in view of U.S. Publication No. 20030056076 A1 to Cook et al. (hereinafter "Cook").

C.   **Claims 9 and 13** stand rejected under 35 U.S.C. §103(a) as being unpatentable over Liang in view of Benayon, and further in view of U.S. Patent No. 7,007,269 B2 to Sluiman et al. (hereinafter "Sluiman").

D.   **Claim 11** stands rejected under 35 U.S.C. §103(a) as being unpatentable over Liang in view of Benayon, and further in view of U.S. Patent No. 6,915,457 B1 to Miller (hereinafter "Miller").

E.   **Claims 12 and 21** stand rejected under 35 U.S.C. §103(a) as being unpatentable over Liang in view of Benayon, and further in view of U.S. Patent No. 6,457,142 B1 to Klemm et al. (hereinafter "Klemm 142").

F.   **Claim 14** stands rejected under 35 U.S.C. §103(a) as being unpatentable over Liang in view of Benayon, and further in view of U.S. Publication No. 20030167421 A1 to Klemm et al. (hereinafter "Klemm 421").

G.   **Claims 17-20** stand rejected under 35 U.S.C. §103(a) as being unpatentable over Liang in view of Benayon, and further in view of U.S. Patent No. 5,909,580 to Crelier et al. (hereinafter "Crelier").

H. **Claim 22** stand rejected under 35 U.S.C. §103(a) as being unpatentable over Liang in view of Benayon, and further in view of U.S. Publication No. 20030093433 A1 to Seaman et al. (hereinafter "Seaman").

I. **Claims 28, 30-32, 34, 36, 41, and 48-51 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in view of U.S. Publication No. 20040158589 A1 to Liang et al. (hereinafter "Liang") and further in view of Benayon.**

J. **Claim 33** stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in view of in Liang, and further in view of Benayon, and further in view of U.S. Publication No. 20030056076 A1 to Cook et al. (hereinafter "Cook").

K. **Claims 35 and 39** stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in view of Liang, and further in view of Benayon as applied to Claim 28, and further in view of U.S. Patent No. 7,007,269 B2 to Sluiman et al. (hereinafter "Sluiman").

L. **Claim 37** stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in view of Liang, and further in view of Benayon as applied to Claim 28, and further in view of U.S. Patent No. 6,915,457 B1 to Miller (hereinafter "Miller").

M. **Claims 38 and 46** stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in

view of Liang, and further in view of Benayon as applied to Claim 28, and further in view of U.S. Patent No. 6,457,142 B1 to Klemm et al. (hereinafter "Klemm").

N.   **Claim 40** stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in view of Liang, and further in view of Benayon as applied to Claim 28, and further in view of U.S. Publication No. 20030167421 A1 to Klemm et al. (hereinafter "Klemm 421").

O.   **Claims 42-45** stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in view of Liang, and further in view of Benayon as applied to Claim 28, and further in view of U.S. Patent No. 5,909,580 to Crelier et al. (hereinafter "Crelier").

P.   **Claim 47** stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 20030033443 A1 to Igotti (hereinafter "Igotti") in view of Liang, and further in view of Benayon as applied to Claim 28, and further in view of U.S. Publication No. 20030093433 A1 to Seaman et al. (hereinafter "Seaman").

Claim 1

Without conceding the propriety of the stated rejections, and only to advance the prosecution of this application, Applicant amends **independent Claim 1**, to clarify further features of the subject matter. **Independent Claim 1** as amended, recites a computer readable medium comprising stored computer-program instructions executable by a processor and implementing instructions for:

> a runtime hosting interface comprising a host abstraction interface (HAI), the HAI corresponding to execution environment abstraction(s) supported by a host application, at least one specific interface or object corresponding to a specific HAI accessible by a runtime during execution

of runtime managed code and responsive to an action or event associated with an identified HAI, the HAI providing an interface for the runtime to configure host execution environment parameters and/or to notify the host application of a runtime event;

   the host application or the runtime negotiating, which will perform certain functions;

   the runtime allocating memory via at least one specific interface or object implemented by the host application;

   the runtime notifying when a task has been moved to and/or from a runnable state; and

   the runtime obtaining additional information during process execution.

Applicant respectfully submits that no such method is taught or suggested in Liang and Benayon, which are the primary and the secondary references cited in eight different §103 rejections (shown as Sections A. to H.).

References Fail to Teach or Suggest Negotiating, Notifying, Obtaining

First, Applicant asserts the Office has failed to establish a *prima facie* case of obviousness. Eight of the §103 rejection relies on Liang and Benayon, as the primary and second references. <u>Liang</u> describes a method for enabling comprehensive profiling of garbage-collected memory systems (Title). Liang is directed towards profiling, providing information on how much or how frequently <u>dynamic memory</u> is allocated by each portion (para. [0009]), not negotiating whether the host application or the runtime perform certain functions, as recited in Applicant's Claim 1. In Liang, a wide variety of profilers can be accommodated by using a set of virtual machine profiler interface events that are designed to be <u>independent</u> of any method for dynamically managing storage allocation and deallocation in a heap within the virtual machine (para. [0012]). In contrast, Applicant's Claim 1 recites " the runtime allocating memory via at least one specific interface or object implemented by the host application, and the runtime notifying when a task has been

moved to and/or from a runnable state". Thus, the evidence shows Liang fails to teach or suggest the features, as recited in Applicant's Claim 1.

Benayon fails to compensate for the deficiencies of Liang. Benayon describes control and administration of the supply of memory managed in multiple heaps to a runtime library (Abstract). Benayon is directed towards providing user control of multiple heaps in an operating system (col. 2, lines 64-65). In Benayon, there is no longer a direct communication between the runtime library and the operating system, with the result that the user has full control over heap memory allocation (col. 4, lines 17-21). In contrast, Applicant's Claim 1 states "the host application or the runtime negotiating, which will perform certain functions." Nowhere in Benayon, is there any discussion or mention of "the host application or the runtime negotiating, which will perform certain functions, the runtime allocating memory via at least one specific interface or object implemented by the host application; the runtime notifying when a task has been moved to and/or from a runnable state; and the runtime obtaining additional information during process execution", as recited in Applicant's Claim 1. Thus, Benayon does not provide what is missing from Liang to support a §103 rejection.

Liang and Benayon, alone or in combination, do not teach or suggest the recited features of Applicant's Claim 1. Consequently, Applicant submits that the evidence relied upon by the Office is insufficient to support a *prima facie* case of obviousness of the features recited in Applicant's Claim 1.

Modification Renders Reference Unsatisfactory for Intended Purpose

Second, the MPEP states, "if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is <u>no suggestion or motivation to make the proposed modification</u>" (MPEP §2143.01 V.) For example, using the user control of memory heaps of Benayon would render Liang unsatisfactory for its intended purpose. In particular, the profile interface of Liang would be rendered unsatisfactory to support garbage collection memory systems, if modified by the teachings of Benayon. The modification presented would render Liang inoperable in monitoring and tracing of events that occur during run-time to provide information for garbage collection. Rather, Benayon relies on user control. Thus, there is no motivation to combine the references as proposed.

The Cited Art Provides No Suggestion or Motivation to Modify/Combine the References

Third, to establish a *prima facie* case of obviousness, there must be some <u>suggestion or motivation</u>, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, <u>to modify the reference or to combine reference teachings</u> (MPEP §2142). The Office stated the motivation for modifying the system of Liang with the teaching of Benayon is "because the teaching Benayon would improve the system of Liang by providing a method of determining the availability of minimum size of heap memory and allocating the heap extension to a user application". Applicant respectfully disagrees. There is nothing in either of the references that would suggest this motivation. In addition, Liang already uses a pointer-size thread-local storage (para. [0246]). Furthermore, Liang has a method for managing storage allocation and deallocation (Liang's Claim 1). Thus, there is <u>no</u> need, suggestion or motivation to

combine the three references. The asserted motivation relies on hindsight without evidence of teaching or suggestion to propose the suggested combination. Therefore, this rejection is improper for this additional reason.

Dependent Claims 3-11, 13-27, and 52-53 depend directly or indirectly from independent Claim 1, and are allowable by virtue of this dependency. These claims are also allowable for their own recited features that, in combination with those recited in Claim 1, are not taught, or suggested by Liang and Benayon. Applicant respectfully requests withdrawal of the §103 rejections.

Applicant respectfully submits that the cited references do not render the claimed subject matter obvious and that the claimed subject matter, therefore, are allowable over the cited references. For all of these reasons, the §103 rejection of these claims should be withdrawn.

Claim 28

Without conceding the propriety of the stated rejections, and only to advance the prosecution of this application, Applicant amends **independent Claim 28**, to clarify further features of the subject matter. **Independent Claim 28** as amended, recites a computing device for enhanced runtime hosting, the computing device comprising:

> memory;
> a processor coupled to the memory;
> means for identifying, by a runtime one or more execution environment abstractions implemented by a host application, the host application for hosting the runtime;
> during execution of runtime managed code and responsive to an action or event associated with an identified one of the respective execution environment abstractions, means for the runtime to interface with specific ones of the execution environment abstractions;

means for the HAI providing an interface for the runtime to configure host execution environment parameters and/or to notify the host application of a runtime event;

means for the HAI providing a pointer interface for the runtime with a pointer to an object associated with the pointer interface, the object for calling by the runtime responsive to a specified event or criteria; and

means for the host application or the runtime negotiating, which will perform certain functions;

means for the runtime allocating memory via at least one specific interface or object implemented by the host application;

means for the runtime notifying when a task has been moved to and/or from a runnable state; and

means for the runtime obtaining additional information during process execution;

wherein the execution environment abstractions correspond to memory management, threads/tasks, I/O completion, synchronization, runtime entry/exit notification, security context, impersonation, runtime configuration, executable service code abstractions, and/or garbage collection (GC).

Applicant respectfully submits that no such computing device is taught or suggested in Igotti, Liang, and Benayon, which are the three main references cited in eight different §103 rejections (shown as Sections I. to P.).

References Fail to Teach or Suggest Features of Claim 28

First, Applicant asserts the Office has failed to establish a *prima facie* case of obviousness. Eight of the §103 rejection relies on Igotti, Liang, and Benayon, as the three references. For example, Igotti, Liang, and Benayon do not teach or suggest "means for the host application or the runtime negotiating, which will perform certain functions; means for the runtime allocating memory via at least one specific interface or object implemented by the host application; means for the runtime notifying when a task has been moved to and/or from a runnable state; and means for the runtime obtaining additional information during process execution", as recited in Applicant's Claim 28.

First, <u>Igotti</u> describes the virtual machine is integrated into a generic application (para. [0003]). In Igotti, a developer uses the second category to integrate the virtual machine in a manner that is completely removed from any host application specific information (para. [0028]). Rather, the API in Igotti has shared resources (para. [00290]), not negotiating whether the host application or the runtime perform certain functions, as recited in Applicant's Claim 28. Therefore, the evidence shows Igotti fails to teach or suggest the features as recited in Applicant's Claim 28.

Second, <u>Liang</u> describes a method for enabling comprehensive profiling of garbage-collected memory systems (Title). Liang is directed towards profiling, providing information on how much or how frequently <u>dynamic memory</u> is allocated by each portion (para. [0009]), not means for the host application or the runtime negotiating, which will perform certain functions, as recited in Applicant's Claim 28. In Liang, a wide variety of profilers can be accommodated by using a set of virtual machine profiler interface events that are designed to be <u>independent</u> of any method for dynamically managing storage allocation and deallocation in a heap within the virtual machine (para. [0012]). In contrast, Applicant's Claim 28 recites "means for the runtime allocating memory via at least one specific interface or object implemented by the host application; means for the runtime notifying when a task has been moved to and/or from a runnable state; and means for the runtime obtaining additional information during process execution". Thus, the evidence shows Liang fails to teach or suggest the features, as recited in Applicant's Claim 28.

Third, <u>Benayon</u> fails to compensate for the deficiencies of Igotti and Liang. <u>Benayon</u> describes control and administration of the supply of memory managed in multiple heaps to a runtime library (Abstract). Benayon is directed towards providing user

control of multiple heaps in an operating system (col. 2, lines 64-65). In Benayon, there is no longer a direct communication between the runtime library and the operating system, with the result that the user has full control over heap memory allocation (col. 4, lines 17-21).

Applicant asserts Igotti, Liang, or Benayon, alone or in combination, do not teach or suggest "means for the host application or the runtime negotiating, which will perform certain functions, means for the runtime allocating memory via at least one specific interface or object implemented by the host application; means for the runtime notifying when a task has been moved to and/or from a runnable state; and means for the runtime obtaining additional information during process execution", as recited in Applicant's Claim 28. Therefore, Applicant submits that the evidence relied upon by the Office is insufficient to support a *prima facie* case of obviousness of the features recited in Applicant's Claim 28. Applicant respectfully requests the §103 rejection of these claims be withdrawn.

Furthermore, there is no evidence of suggestion or motivation to modify the reference or to combine reference teachings (MPEP §2142). Applicant respectfully submits that the cited references do not render the claimed subject matter obvious and that the claimed subject matter, therefore, patentably distinguishes over the cited references. For all of these reasons, Applicant respectfully requests that the §103 rejection of these claims be withdrawn.

Dependent Claims 30-37, 39, and 54 depend directly or indirectly from independent Claim 28, and are allowable by virtue of this dependency. These claims are also allowable for their own recited features that, in combination with those recited in

Claim 28, are not taught, or suggested by Igotti, Liang and Benayon.   Applicant respectfully requests withdrawal of the §103 rejections.

New Claims

Applicant adds dependent **Claims 52-54** to further clarify features of the claimed subject matter. The original specification and drawings support these claim amendments at least at pages 13-15, Figures 1, and 2. Dependent Claims 52-54 are presented and directed to subject matter of the original disclosure. Therefore, these revisions introduce no new matter.

Conclusion

Claims 1, 3-11, 13-28, 30-37, and 39-54 are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of the subject application. If any issues remain unresolved that would prevent allowance of this case, the Examiner is requested to contact the undersigned attorney to resolve the issue.

Respectfully Submitted,

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Dated: _4 - 30-2007_   By: _Shirley Lee Anderson_

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